

REMARKS

Claims 1, 2, 12 and 13 are pending. Claim 1 is amended herein. Support for the amendments is at least found at paragraphs [0088], [0110] and Fig. 4 and as detailed below.

Applicants' Response to the Claim Rejection under 35 U.S.C. §103(a)

Claims 1, 2 and 12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Spear (US 6,075,800) in view of Gen-Ei (US 6,618,420) and further in view of Nakamura (US 2003/0231685).

In response thereto, applicants respectfully submit that the present invention as now claimed is not obvious over the cited references for at least the reason that the combination does not provide for all the references, nor provide a rationale to modify the combination so as to derive the present invention.

Specifically, the combination of Spear, Gen-Ei and Nakamura at least fails to provide for the feature of parent claim 1 that a ratio of an area of the first and second supports relative to a chip area of the semiconductor laser element is set within a range from more than 33% to less than 52%.

The rejection acknowledges that neither Spear nor GenEi provide for an area of the first and second supports relative to an area of said semiconductor laser element is set within a range from more than 33% to less than 52%. For this aspect, the rejection relies solely upon Nakamura. Specifically, the rejection cites to first and second supports per Fig. 2, maintaining that a portion of W outside trenches 15 relative to an area of the semiconductor laser element

defined in Fig. 2 by the width W is set within the claimed range because the width W in Fig. 2 is 30-40 μm while the grooves 15 are 10 μm and the wave guide is 2 μm the supports are therefore 4-9 μm each.

The rejection responds to applicants' prior argument that Nakamura's width W does not include an electrode on the ridge, despite electrode 25 clearly covers the ridges as shown in Fig 2, by asserting that "an area" is not limiting to the entire width of an element but may be defined broadly. Page 6 of the Office Action.

As described at paragraph [0088] of the present application, W_c of Fig. 4 corresponds to a chip width. Further, as set forth in paragraph [0110] "with a fixed depth of the element, the ratio of the area of the support relative to the entire area of the element is proportional to the width ratio R_w ." Since W_c is termed as "chip", an area of the semiconductor laser element clearly corresponds to a chip area of the semiconductor laser element. Nakamura cannot provide for this aspect of the invention as Nakamura clearly requires that the electrodes 25 and 26 are essential to the laser element and that these elements extend beyond the ridge. Hence, any chip area is larger in scope than is asserted by the rejections calculation.

For instance, paragraph [0014] of Nakamura described that "even where the area of the wire bonding portion 75a is reduced for the purpose of the capacity reduction, the wire bonding portion 75a needs a quadrangular area whose one side is about 80 μm in the case of a wire having a diameter of about 25 μm " meaning that electrodes 25 and 26 are essential to the laser element. Furthermore, at paragraph [0015] the description of "even in the junction down state in which the semiconductor laser 60 is mounted with being turned upside down, a reduction in the

area of each wire bonding portion 75a will degrade the reliability of connection of the semiconductor laser 60 by the bonding materials" indicates these areas, electrodes 25 and 26, are also necessary in case junction down state in which the semiconductor laser is mounted with being turned upside down. In other words, a skilled artisan reviewing Nakamura will clearly understand that Nakamura is interpreting the electrode as beyond the ridges. This portion must be considered in an area amount when forming the device.

Under U.S. patent law as restated at M.P.E.P. §2141.02: "[a]scertaining the differences between the prior art and the claims at issue requires interpreting the claim language, and considering both the invention and the prior art references as a whole."

As such, any combination with Spear and GenEi will require the consideration of the entire electrodes 25, 26 not just the portion between the ridges. A skilled artisan will not look to the ratio of portion of the electrodes between the ridges when making a determination about any possible combination with other references. Therefore, in the present case, electrodes 25 and 26 of Nakamura are not third and fourth supports but these entire areas would be used in calculation of the ratio by a skilled artisan. The skilled artisan would not discern from this disclosure that providing the ratio of supports to the ridge within the claimed percentages results in an improved laser having high speed performance.

Wherefore, applicants respectfully submit that claim 1 and its respective dependent claims are not obvious over Spear, GenEi and Nakamura.

Claim 13 is rejected under 35 U.S.C. §103(a) as being unpatentable over Spear (US 6,075,800) in view of Gen-Ei (US 6,618,420) and Nakamura (US 2003/0231685) and further in view of Mitsuhashi (US 6,199,561).

By addressing the rejection of parent claim 1, as detailed above, likewise the rejection of claim 13 should be considered addressed by nature of its dependency.

CONCLUSION

In view of the foregoing amendments and accompanying remarks, it is submitted that all pending claims are in condition for allowance. A prompt and favorable reconsideration of the rejection and an indication of allowability of all pending claims are earnestly solicited.

If the Examiner believes that there are issues remaining to be resolved in this application, the Examiner is invited to contact the undersigned attorney at the telephone number indicated below to arrange for an interview to expedite and complete prosecution of this case.

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Art Unit: 2828

Amendment under 37 C.F.R. §1.116
Attorney Docket No.: 062998

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
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